

Managing Urethral Stricture Disease in a Peripheral Hospital in Nepal

Authors:

Dipesh Kumar Gupta¹, Deepak Jaiswal¹, Jonesh Tiwari¹, Saharaj Siddiqui²

¹Department of Uro-Surgery, Nepalgunj Medical College and Teaching Hospital, Nepalgunj, Banke, Nepal

²Intern Doctor, Nepalgunj Medical College and Teaching Hospital, Nepalgunj, Banke, Nepal

Corresponding Author:

Dr. Dipesh Kumar Gupta, Associate Professor, Department of Uro-Surgery, Nepalgunj Medical College, Nepalgunj, Banke

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ABSTRACT:

Background: Urethral stricture disease is a complex disease because of demanding procedures to treat and high recurrence rate. Proper selection of the patient for a particular procedure is needed. Complex procedures of urethroplasty however, have very good results in expert hands. **Materials and methods:** This was a retrospective study done at Urology Department of Nepalgunj Medical college, Nepalgunj Hospital over a period of three years. Fifty patients were included.

Results: Mean age of the patients was 48 ± 19.11 years. The most common presenting symptom was low stream and straining. Twenty-five patients who had short length stricture underwent DVIU, while other complex strictures were dealt with by different forms of urethroplasty. Outcome was good in terms of post operative uroflowmetry results. **Conclusion:** DVIU has good outcome in properly selected group but has high recurrence. Urethroplasty in different forms has best results on long run.

Keywords: Urethral Stricture Disease, Peripheral, recurrence rate

INTRODUCTION:

A fraction of male patients with lower urinary tract symptoms present because of urethral stricture disease (USD) which has an estimated prevalence of 0.6%.¹ The disease is often misdiagnosed and even mismanaged in non-expert hands. Because of complexity of treatment, patients bear with the morbidity of the disease.

The most typical way men present with USD is with obstructive voiding symptoms (eg, slow urinary flow).² However, up to 10% of patients will present without a history of bothersome symptoms and may only be diagnosed after a difficult urethral catheterization or during evaluation of recurrent urinary tract infections or urinary retention. USD can affect any part of the male urethra but most frequently affects the bulbar (43%) and penile (37%) segments.³ Treatment approaches for USD range from minimally invasive endoscopic techniques (eg, urethral dilation, direct vision internal urethrotomy) to open urethral reconstruction, which often uses local fasciocutaneous flaps and/or autologous tissue grafts. Historical success rates for endoscopic management range from 0% to 50%,⁴ with higher success rates being noted for shorter bulbar strictures that have not previously been managed surgically.

Open surgical techniques have significantly higher success rates, ranging from 50% to 98%,¹ with higher success rates generally being reported for shorter bulbar repairs that do not require flaps or grafts.

Though urethroplasty is a complex procedure and is best done in a center with high volume, it gives best outcome and can also be managed in a peripheral hospital.

MATERIALS AND METHODS:

This was a retrospective study carried out in the department of urology, Nepalgunj Medical College, Nepalgunj hospital, from January 2018 to February, 2021. Ethical approval was taken from institutional review board. A total of fifty patients were enrolled. Patients were evaluated with detailed history and physical examination so as to establish etiology. Urine routine analysis as well as culture and sensitivity were performed. Retrograde and micturating cystourethrogram was performed as a standard procedure.

Appropriate surgical procedure was performed as per need. Short segment non traumatic stricture was managed by direct vision internal urethrotomy (DVIU), while longer strictures were managed by buccal mucosa urethroplasty by modified Kulkarni method. Similarly,

obliterative traumatic strictures were managed by resection urethroplasty by end-to-end urethroplasty technique. Fisher exact test and student t test were used where appropriate. SPSS version 20 was used to analyse data and p value <0.05 was considered significant.

RESULTS:

A total of fifty patients were evaluated during this period. Mean age of the patients was 48 ± 19.11 years. Mean age of the patients who had endoscopic treatment (DVIU) was 57.12 ± 18.10 years while those who had urethroplasty was 39.84± 16.19 years (p= 0.01). Voiding lower urinary tract symptoms like low stream and straining were present in nearly all patients (98%) while few patients presented with pain and fever (10%).

Most common etiology in our patient group was trauma (56%) followed by inflammatory (32%) and then idiopathic (12%). The most common site of stricture was bulbar urethra (Table I). Among these long segments penile and bulbar were 2 and 1 in number, respectively. Mean length of the stricture ranged from 1 cm to 12 cm (Table II)

Primary procedure performed among these patients were buccal mucosa graft urethroplasty (Figure I and II), end to end urethroplasty (Figure III and IV), progressive perineal urethroplasty and DVIU depending on the length, site and etiology of stricture (Table III). Perineal incision (84%) was the most commonly used incision in urethroplasty, few had circumising incision.

Table: I. Different sites of stricture with primary procedure done

Site of Stricture	Urethroplasty	DVIU	Total
Penile	4	8	12
Penobulbar	3	0	3
Bulbar	14	17	31
PFUI (Bulbomembranous)	3	0	3
Panurethral	1	0	1

Table: II. Length of stricture in different procedure subgroup

Length of Stricture (cm)	Urethroplasty	DVIU	p value
Mean	3.18 ± 2.72	1.30 ± 0.52	0.01
Maximum	12	0.5	
Minimum	01	2.5	

Table: III. Procedures done in cases of strictures

Procedure	Frequency (n=50)	Percentage
End-End Urethroplasty	14	28
BMG Urethroplasty	9	18
Progressive Perineal Urethroplasty	2	4
DVIU	25	50

After the procedure patients had 5.64 days of average hospital stay in urethroplasty (5.64 ± 2.38 days) while DVIU patients were mostly discharged in a couple of days (1.40 ± 0.81 days) p<0.05. Procedure success was assessed with 3 months post-operative Qmax measurement with Uroflowmeter (Table IV).

Table: IV. Qmax in Uroflowmetry in pre and post operative patients

Mean Qmax (ml/s)	Urethroplasty	DVIU	p Value
Pre-operative	5.72 ± 1.74	7.08 ± 1.15	0.02
3 months	21.68 ± 5.42	23.04 ± 5.61	0.38

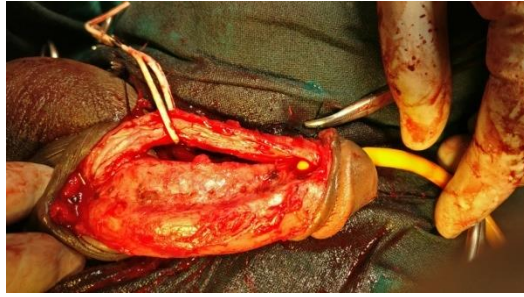


Figure I Penile Urethra dissected and dorsal urethrotomy done for anastomosis with graft



Figure II After buccal mucosa graft placement and anastomosis



Figure III Perineal wound with transected urethral ends which are ready for anastomosis



Figure IV Post End –End anastomosis of the bulbar urethra

DISCUSSION:

The surgical treatment of urethral strictures varies according to cause, location, and length of stricture. Treatment of strictures involving the bulbar urethra is relatively well defined. However, management of long-segment urethral stricture, or panurethral stricture disease, is challenging.⁵

In this series maximum number of strictures were found in bulbar urethra (62%), which was followed by penile (32%), and bulbomembranous (6%) being the least common. Various other studies have also reported bulbar urethra being the commonest site of urethral stricture.⁶ DVIU and end-to-end urethroplasty is commonly accepted procedure for the treatment of short segment bulbar urethral stricture (<2 cm).⁷ The procedure is less invasive, cost effective and more appropriate for older patients.⁸ Stricture longer than 1 cm, single setting of DVIU followed by end-to-end urethroplasty is commonly performed procedure.^{9, 10} We had 50% population who underwent DVIU.

In various studies, the surgical outcome of DVIU has success rate of 20-80%, depending on the length of the stricture.¹¹ On the other hand, Santucci et al in their series have found very low long-term success rate of DVIU, only 8%, over a mean follow up of 5 years.¹² At three month follow up, our patient had good flow after DVIU but lost to longer follow up. For a longer stricture (>2cm), ventral or dorsal onlay urethroplasty using a buccal mucosa graft is currently recommended, where the urethral lumen is relatively well preserved and the spongiofibrosis around the lumen is limited to 1 mm.^{13, 14}

Augmented anastomotic urethroplasty, with complete excision of the worst stricture segment, is currently recommended for strictures that cover a particularly dense and narrow area of 1 to 2 cm in length. Both ventral and dorsal onlay free grafts survive well with equal success rates.¹⁵

Panurethral stricture involves the full length of the urethra from meatus until the most proximal bulb. The incidence of panurethral strictures is increasing. Most panurethral strictures in the Indian subcontinent are due to lichen sclerosus. Iatrogenic causes are also on the increase. Iatrogenic causes include urethral catheterization, cystourethroscopy, transurethral resection, and previous urethral surgeries.⁵ We had one case of lichen sclerosus with panurethral stricture. Buccal mucosa graft urethroplasty with modified Kulkarni method did well in this patient.

Traumatic injury to the prostaticmembranous urethra has been reported to occur in A 10% of pelvic fractures.¹⁶ The magnitude of injury determines the length of the ultimate defect, ranging from elongation with no tearing of the urethra to complete transaction, seen in most cases. Therefore, the resulting 'stricture' is technically a

distraction defect, with no lumen present between the urethral ends.

We had 2 cases of pelvic floor injury who underwent repair. Postoperative flow was satisfactory in initial months however on one year follow up one patient required urethral dilatation. In expert hands the results are excellent, with success in > 90% of patients.¹⁷

Overall, our series had good outcome, comparable to other series.^{12, 18} However our study has limitation of short term follow up. Other limitations are small sample size with retrospective nature of the study.

CONCLUSION:

Urethral stricture disease has a complex etiology and treatment protocols as it depends on many factors and treatment has to be individualized. DVIU has good outcome in properly selected group but has high recurrence. Urethroplasty in different forms has best results on long run.

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